

On *Dioscorea birmanica*—a new species from Burma—and two allied species.—By D. PRAIN & I. H. BURKILL.

[Read 3rd August, 1904.]

We find to be undescribed a yam which is in Burma, through the moister parts of that province, almost the commonest of all, so that its very abundance entitles it to attention. It is a climber in the open forests, where the rainfall is 50 inches and more, and in the 10—15 feet high scrub which often covers waste lands. It seems to avoid the densest forests; and it is quite absent from dry central Burma where the rainfall is small.

Its distribution makes the letter Q round the dry focus of Burma, as it is common in the northern forests, common in the southern forests, is found down a connecting strip on the west in the Arakan Yomas and down another on the east in the Shan States; the tail of the letter lies in Tenasserim.

In the northern forests it grows both over bushes in the chequered shade under the tall Dipterocarps, and also climbs over bamboos and bushes getting a considerable amount of sun where the Dipterocarps no longer exist. About Katha, where red-soil forests and black-soil forests meet, it is more prevalent perhaps on the red-soil; at Bhamo it is quite common on black-soil. On the east, in the northern Shan States, it is very common about Hsipaw (Thibaw), and thence to Lashio, on red soil and black soil. Southwards we know it to occur in the state of Mōngkung (Maingkaing), and about Taunggyi and Fort Stedman. On the west we know it to occur in the Gangaw valley and again near Kan on the Arakan Yomas, in the latitude of Minbu. In the south we know it to be very plentiful all along the railway line from a little south of Taungu to Nyaunglebin in the Pyinmana forests, on a yellowish-grey soil; and we know it to grow quite abundantly on the hills close to Prome. Southwards again it may be seen in the bamboo jungle which clothes any slight elevation rising above the otherwise uninterrupted stretches of rice-fields. It is readily found close to Pegu, and as near to Rangoon as Hmanwi. Towards Taungu it grows in savannah land, in the

Pyinmana forests it grows over the bushes that are mixed with teak; at Prome it grows in deciduous forest of *Ægle Marmelos*, bamboos, etc., and, as already said, it grows about Pegu in bamboo thickets.

In Tenasserim, near Moulmein, it is excessively common on laterite in 10 feet jungle of *Combretum*. To the east of Moulmein it is absent from the high evergreen forests of the Dawna range, but re-appears beyond them in the thinner forest of Thingan-nyi-naung, and continues right up to the Siamese frontier at Myawadi on a clayey grey soil.

The tuber of the plant is very woody, and has a hard skin cracking rather rectangularly like the carapace of a tortoise; in shape it is very irregular, with blunt processes lying just under the surface of the soil. Wiry roots arise from the surface, which bear low warty thorns, and dying may themselves almost constitute thorns. The flesh is yellowish-purple and unpleasant to the taste. Even the wild boars seem to leave the root altogether alone. One stem arises from each tuber, and usually bears strong prickles; at the base of each leaf in the position of stipules are two or four downwardly directed small thorns. When young the stem is pubescent; when old, with the hairs rubbed off, it becomes shining and has dark blotches on it. The leaves are very like those of *Dioscorea fasciculata*, but are larger; and the rows of prickles which generally line the main-nerves serve to distinguish them. When young they are pubescent; when old they are glabrescent, especially above. The inflorescence, which is produced in the month of May, is a long droopingspike: in the male the flowers are arranged on it in small scorpioid cymes; in the female they are solitary. This type of secondary inflorescence has hitherto never been described in any Asiatic *Dioscorea*, though there are at least two others which share the character. The young cymes are recurved; but after flowering they are found to be quite straight. The young ovaries, after flowering is over, begin to turn upwards, and long before the fruit reaches maturity have come to be parallel to the rhachis, their tips looking upwards. At maturity the fruits are imbricated, all directed away from the earth: dehiscing, they hold the seeds until some sudden puff of wind blows them away. It is when in fruit that the plant is most easily recognised; for the long spikes, sometimes over 40 cm. long, and with 40 capsules, are very conspicuous and distinctive.

The root is too woody to be fit for use as food, but we have heard of a very quaint use of it in southern Burma as a reputed antifecundative taken by the male before coition.

The plant is widely known in Burma as Hkadhkyo, pronounced Khatcho, or at Prome as Ginbeekpya; it is called Katak in the Northern Shan States.

We proceed to give a diagnosis of the plant and a list of localities.

DIOSCOREA BIRMANICA. *Rhizoma* informe, horizontale hypogæum, carne luteo-livida lignosum amarum, corticis rimis testæ testitudinis similis. *Caulis* armatus, e radice singulus, in dumetis sinistrorsum ita volubilis ut sarculos ultimos tangere pedite non licet; sarculi sæpissime pubescentes, sed sarculi (præcipue vetustiores) glabri tamen nonnunquam occurruntur: caulis vetustus semper glaber. *Folia* membranacea, alterna, cordata vel late cordata sinu aperto, caudato-acuminata, vel modo caulium primo pubescentia dein supra glabrescentia vel glabra, infra ad nervos primarios spiculis recurvis armata, 11–15 cm. longa, 7·5–16 cm. lata, nervis primariis 7–11 (extremis bifurcatis) infra prominentibus supra distinctis, nervis secundariis supra infraque distinctis, reti anastomotico indistincto: petiolus pubescens vel puberulus vel glaber, armatus, 4·5–9 cm. longus. *Spicæ* dependentes, ad axillas foliorum singulæ vel binæ, 35–45 cm. longæ. *Spicæ masculæ* rhachi præter basin sterilem 1–3 cm. longam flores in cymis scorpioides 5–10 mm. distantibus gerentes: cymæ 5–6-floræ, 1 cm. longæ, apicem spicæ versus spectantes: bractæ bifariæ, alternæ, fere glabræ, 1–5 mm. longæ, brunneo-lineolatæ; bracteolæ 0. *Perianthii masculi* campanulati lobi marginibus exceptis externe villosi, brunneo-lineolati, exteriores lanceolati acuti cymbiformes, interiores ovati acuti marginibus retrorsi. *Stamina* 6, æqualia, perianthii lobis breviora, filamentis quam antheris longioribus. *Spicæ femineæ* flores 20–40 sessiles alternatim gerentes: bractæ et bracteolæ adsunt. *Perianthii feminei* lobi iis floris masculi similes. *Ovarium* densissime pubescens. *Fructus* stipitata, stipite 4–5 mm. longo, imbricata, mox ad cælum versus spectantes, glabrescentes, maturæ tamen semper glabræ: alæ regulariter semiorbiculares vel irregulariter oblongæ, 2–3 cm. longæ, 10–15 mm. latæ, apice retusæ, basi truncatæ vel cuneatæ. *Semina* ala membranacea inæqualiter circumcincta.—*Dioscorea spinosa* Wall. Cat. 5103, pro parte; Hook. fil. Fl. Brit. Ind. VI. 291 pro parte; Collett and Hemsley in Journ. Linn. Soc. xxviii. (1890) p. 137.

BURMA. Hukung Valley near the Assam border, *Griffith*, 5545, K.D. Bhamo District; Bhamo, on land above flood level, *Burkill* in Herb. R. E. P. 22770; hills east of Bhamo beyond Momouk, *Burkill* in Herb. R. E. P. 21520, 21546. Katha District; Katha, *Burkill* in Herb. R. E. P. 22499, 22640, 22657, 22659. Northern Shan States; Lashio, *Burkill* in Herb. R. E. P. 22534, 22578; Manpwe, *Burkill* in Herb. R. E. P. 22504; Hsipaw, *Burkill* in Herb. R. E. P. 24059, 24137; between Hsipaw and Mankang, *Burkill* in Herb. R. E. P. 24140. Southern Shan States; without precise locality, *Abdul Huq*;

Möng-Küing, 2500–4000 ft., *Craddock*, 27; Fort Stedman, *Collett*, 704; Taunggyi, *Abdul Khalil*. Pakokku District; Gangaw Valley, *Millar* in Mus. R. E. P. 20634. Minbu District; below Kan on the Yomas, *Aubert and Gage*. Prome District; hills South of Prome, *Burkill* in Herb. R. E. P. 23824. Pegu District; Kyauktaga, *Burkill* in Herb. R. E. P. 21978, 22119; Sittang side, *Kurz*, 2629; Bank of Sittang, *Kurz* 483; Pegu town, in bamboo thickets, *Burkill* in Herb. R. E. P. 21960. Myaungmya District; Hmanwi, *Burkill*. Amherst District; Moulmein, *Wallich*, 5103 C; on the south-east of Moulmein, *Burkill* in Herb. R. E. P. 23917; Thingan-nyi-naung on the east of the Dawna range, *Burkill* in Herb. R. E. P. 24385; Myawadi on the Siamese frontier, *Burkill* in Herb. R. E. P. 24448. Tenasserim, without exact locality, *Helfer*, 5544.

A very closely allied species is found in south-west China, which we here describe.

DIOSCOREA YUNNANENSIS. *Rhizoma* deest. *Caulis* sinistrorsum volubilis, dense pubescens, teres, inarmatus (saltem quoad surculi). *Folia* membranacea, alterna, subreniformi-cordata vel cordata, sinu angustiore, apice parum acuminata, supra glabrescentia viridia, infra dense albo-pubescentia, inermia, 7–9 cm. longa, 11–12 cm. lata, nervis primariis 9–11 (extremis bifurcatis) infra distinctis supra vix distinctis, nervis secundariis supra infraque indistinctis, reti anastomotico vix visibile: petiolus dense pubescens, inermis, 3–8 cm. longus. *Spicæ* dependentes, ad axillas foliorum singulæ vel binæ, masculæ 18–20 cm. longæ, feminæ 5–20 cm. longæ. *Spicæ* masculæ rhachis præter basin sterilem 1–3 cm. longam flores in cymis scorpioidiis 4–10 mm. distantibus gerentes: cymæ 3–5-floræ, 5 mm. longæ, apicem spicæ versus spectantes; bracteæ bifariæ, alternæ, extus dense glabrescentes, intus glabræ, 1–5 mm. longæ, brunneo-lineolatæ: bracteolæ 0. *Perianthii* masculi campanulati lobi brunneo-lineolati, subæquales, ovato-acuti. *Stamina* 6, æqualia, perianthii lobis breviora; filamenta antheras subæquantia. *Spicæ* feminæ flores 6–12 sessiles alternatim gerentes; bracteæ extus dense pubescentes: bracteolas non vidimus. *Perianthii* feminei lobi iis floris masculi similes. *Ovarium* densissime pubescens, 3–6-costatum. *Fructus* maturæ ignotæ, post anthesin teste ovario gravido ad cælum versus respicientes.

CHINA: Yunnan; Mengtze, in woods at 4,600 and 5,000 feet, *A. Henry*, 9288 and 9288 A.

This species differs from *D. birmanica* in the more pubescent leaves, in the equal perianth-segments and in the filaments.

DIOSCOREA sp. Another apparently nearly related plant has

been once collected by Scortechini in Perak, who gives no precise locality.

It is distinguished, as far as the sterile plant is concerned, by the main stem being densely beset with very large compound prickles which have two to six cusps. The smaller stems have simple prickles fewer and smaller than those on the main stems, but even the prickles on these are larger than the prickles usually met with in corresponding situations on *D. birmanica*. The petioles are prickly as in the Burmese plant and have the same basal stipular thorns; but the leaves themselves are rather differently shaped, being ovate-cordate, 20 cm. long by 11 cm. broad, and having no thorns on the veins: the younger leaves have hairs beneath towards the base. The plant, which is probably an undescribed species, deserves to be looked for.
